São Thomé and Principé.

By MALCOLM BURR, D.Sc., F.E.S.

In the Gulf of Guinea, with Nigeria to the north and the Cameroons to the east, there is a series of small oceanic islands of volcanic origin. Nearest to the coast is Fernando Po, a Spanish possession; next come Principé and São Thomé, both Portuguese, the latter lying on the equator, and the most remote and furthest out to sea the isolated Spanish rock of Anobon.

Principé and São Thomé are as strange and picturesque as any spot on the earth; the skyline is formed of a series of serrate crests, great rounded bosses, and triangular fangs; at Principé these project beyond the forest and rise naked to the heaven; at São Thomé a dense vegetation covers them almost entirely. The alkaline rocks of which they are composed, mainly basalts and phonolites, are broken down by the heavy rains into a rich soil, so fertile, the local folk say, that if you lean on your walking-stick for a few minutes, it will take root and start sprouting. At São Thomé itself the annual rainfall is only about 40 inches, which has to be supplemented by irrigation for the cocoa plantations, but at one corner of the island it rains throughout the year and the annual fall is nearly 120 inches.

Such humidity in a tropical climate produces an astonishing exuberance of vegetation, but there is little of the original forest left; it has nearly all been replaced by the energy of the planters and is replaced by a solid mass of banana-trees, oil and cocoa palms, and fruits of every kind. It was most tantalising to spend just one hour collecting at both these islands, to know that within reach there was at least some area of unspoilt natural conditions and that at São Thomé at least and most probably on Principé too, on the higher altitudes, there is a special alpine flora; there is the local conifer, *Podocarpus manni*, Hook., and at least ten peculiar species of plants, while others are common to the island of Fernando Po, the volcanic mountains of the Cameroons, Kilimandjaro and Nyassaland. In this reeking atmosphere the trees are covered with epiphytes; many of the trees have beards of the lichen, *Usnea barbata*, over a yard long and dead trunks rotting on the rank ground are covered with fungi, ferns and *Peperomia*; Begonias grow wild and the finest is the endemic *Begonia baccata*, Hook., which attains a height of fifteen or sixteen feet, with leaves over a yard long.

I had an hour collecting at Principé on April 15th, and an hour on São Thomé the following day. Among the bananas and palms I found but little; it was in the few spots where some grassy and weedy vegetation enjoyed a little freedom that I picked up a few species of Orthoptera. Thus, on the path by the landing stage at Principé, in rank grass, there are two species of *Xiphidium*; one is very like *X. fuscum*, the commonest species in southern Europe, but the other has abbreviated organs of flight and recalls our British *X. dorsale*.

In the longer herbage at the edge of the trees there is *Conocephalus* sp., closely resembling the common European *C. mandibularis*, but adult specimens were few at this date. The commonest grasshopper is the pretty green *Oxya hyla*, Serv., extremely like, but not at all related to *Parapleurus alliaceus*, Germ., which occurs in similar situations in southern and central Europe; the last time I had seen it was in the

distant Caucasus, near the eastern shores of the Black Sea; with it a brown *Euprepocnemis guineensis*, Kr., hopping and flying clumsily in the wet grass like the south-European *E. plorans*. Sweeping in the grass produced a small elongated *Tettix*, just like our familiar *T. subulatus*, and the quaint little cricket *Trigonidium cicindeloides*, Ramb., with indigo elytra and buff femora, which extends almost all over Africa and Asia and is common on the northern shores of the Mediterranean.

The thing that struck me most was the European aspect of the Orthoptera. The only exotic touch was a cluster of ugly black apterous cockroaches under a rotten bunch of palm fruit. I was disappointed at first, as I hoped to make the acquaintance of new and unfamiliar forms or things, that I had so far known only in museums, but a little reflection told me that of course these familiar genera, if not species, were really Ethiopian, and extend their distribution to the southern extremities of Europe which, after all, were part of the African continent until the great geographical disturbances of the Oligocene which transfered the south of Spain, most of the Mediterranean islands, Sicily and southern Italy to Europe, where they have not developed new characters during the great lapse of time. To my inexperienced eye, at Principé even the butterflies had a decidedly Palaearctic appearance; a *Papilio* was quite common that to me looked merely somewhat larger and decidedly blacker than *P. machaon*; the blues looked familiar enough; a *Vanessa* was like enough to *Aglais urticae* not to look very strange, and a Satyrid, I felt quite sure, was *Aphantopus hyperantus*. The birds, too, produced the same impression; there was nothing suggestive of the Zoological Gardens; three white egrets flew across the bay and a purple heron; kites were hawking over the port. In the dark green waters a few huge, red, sea bream lazily rose to the refuse thrown from the ship; they must have run to 20 or more pounds; I saw no sharks and the only really strange-looking creature we noticed at Principé was a long narrow fish like an elastic pike that had been stretched to double its normal length; it was dark green above and white beneath, with a sharply marked boundary line between the two colours; it had long sharp nasty-looking jaws, with which it snapped at rubbish floating by the sides of the vessel. Of reptiles we saw but one, a slender grey snake that looked like a coluber, but Pavel Stepanovitch was positive that it had a triangular head; we let it go, and it slipped down a hole that must have been made by an animal twice the size of a rat.

At São Thomé the impression was different; true, the same *Euprepocnemis* was numerous and the same *Conocephalus* and *Xiphidium*, but an unfamiliar note was struck by another species of *Euprepocnemis*, handsome in a livery of rich dark green and yellow. Sweeping some shrubs produced half a dozen very immature green mantids, but I was lucky enough to take an adult, a female, sitting waiting its prey on a bunch of ornamental daisies in a wonderful garden; it closely resembles *M. religiosa*, but the wings are strongly tinted with crimson; a striking difference is that, instead of the black spot on the inner face of the trochanters the whole of that surface of the segment is of a bright hedge-sparrow blue, the first time that I have noticed this colour in the Orthoptera. The lining of the femora has also a conspicuous dark spot; neither of these colours are visible in the ordinary position of the forelegs, that is, when they are more or less closed like the blade of a clasp-knife; to show them, the creature must extend and expand the

raptorial limbs; that they do this seems probable but I am not aware of any recorded observation on the point. Other species produced by sweeping grass were a *Tettix*, and a very small, fragile, pale buff cricket, *Nemobius* sp., which to me looked like a pale form of the variable and widely distributed *N. saussurei*, Burr, or *N. tartarus*, Sauss., which occurs through most of Asia and extends its range into eastern Europe.

The only opportunity I had of observing Orthoptera in any spot other than in the artificial forest was on the open yard of the head-quarters of the great and wealthy plantation of Boa Entrada, which covers some twenty square kilometres of cultivation; it was raining as seems usual here, but on the wet ground in the finer intervals I picked up a pair of *Acrotylus patruelis*, H.S., another species familiar to us in southern Europe, but of Ethiopian origin, and a single Oedipodid, only in the nymph stage; this was unfortunate, as it is likely to be an interesting species.

Of course, in both islands the vegetation is of the most tropical, both in its amazing exuberance and in kind; the bananas, the mango-trees, tamarinds, the Heveas and the *loquats* (*Eriobotrya* = *Photinia*), the sugar-canes, the coffee and cinchona, the cocoa-nuts (*Cocos nucifera*), the cocoa-palms and lofty oil-palms (*Elaeis guineensis*) and the graceful *Eriodendrum* towering above them, there is nothing suggestive of Europe in these, unless it be of the hothouses at Kew. The population, too, is mainly of African blacks, mostly from Angola, but in recent years there has been an influx from Mozambique; these are not so fine a people as the Angolans and may be distinguished by the ornamentation of their faces, consisting of rows of short parallel scars cut along the forehead and the cheeks. The birds too, at least at São Thomé, afford an exotic touch; I understand there are parrots there, which is quite likely, but we did not see them. I caught a glimpse of one sweet-voiced little creature, a small blackish bird with a white belly, about the size of a sparrow, with a long and slender curved beak; another, which looked like a pied flycatcher crossed with a wagtail flew up on to a telephone-wire at the headquarters of the plantation we visited; the most extraordinary feature was its immensely long tail, twice as long as the body or more, and it was not stiff, like most bird's tails, but wavy and seemed to be forked; it streamed in the air like a pennant when the pretty little creature flew up from the ground. The butterflies, too, at São Thomé, produce a much more exotic impression; we saw several very beautiful species, which I am sure I have often enough seen in collections and museums; they are probably common and familiar African forms, and there was certainly nothing European in the appearance of any of them.

Our visit to the islands was brief in the extreme and merely served to whet our palates; it is quite probable that insects in general and Orthoptera in particular of very great interest occur in the unspoilt regions and especially on the peaks; there is certainly one small apterous grasshopper, *Parathericles elephantulus*, Burr, described by me in 1899, one of that strange equatorial family the *Eumastacidae*, which is most probably peculiar to the island. As far as I am aware only one specimen exists in collections, the type, now in the Vienna Museum. It was disappointing not to see the virgin forest on the equator; the last I had seen was on the edge of the Arctic, in northern Siberia, and

Pavel Stepanovitch was fresh from Chinese Turkestan and Tibet, so we were both well prepared for some striking impressions. However, it is better to be thankful for the brief moments ashore which were vouchsafed to us, and it were ungrateful indeed to grumble.

Miscellaneous Notes from Argentina. VIII.

By KENNETH J. HAYWARD, F.E.S.

The Larva of Chloridea armigera, Hb.—Length 32 mm.

Head olive brown, shiny, with blackish mouth parts.

Body pale green with fine longitudinal pale yellowish-white lines. A dorsal stripe consisting of a fine double black line. Dorsally on the forward portion of the abdominal segments a yellowish patch. Upper lateral area darker, the longitudinal lines being fewer on a slightly darker ground. The lower lateral area yellowish with some intermingling of the ground colour. Prominent black tubercles with grey setae. These are most prominent as follows. On the thoracic segments the anterior trapezoidals, and both anterior and posterior trapezoidals on the abdominal segments. Between these trapezoidals is a darker shade. A supra- and smaller post-spiracular on each segment. On the last segment a secondary tubercle on the dark shade above the spiracle and the darker area between the trapezoidals very black and prominent. The trapezoidals shaded laterally with a pinkish flush. The larva light green beneath.

Remained in the pupal state 15 days.

Foodplant *Eupatorium hecatanthum*, (DC) Back. (*Compositae*). Locally known as "Tempetary."

Imago and empty pupa case sent to B. M. Nat. Hist. under No. 7032.

The Egg and Larva of Eudamus catillus, Cram.—Whilst in the forest at Villa Ana on February 7th (1926), I noticed a specimen of this insect behaving in a rather subdued manner, and watching it carefully concluded that it was ovipositing. After one or two fruitless searches I chanced on the foodplant and thereafter found the eggs in some abundance. Young larvae however defeated me for a time until I discovered their mode of living in a tiny tent made by eating partly around a section of the leaf and then turning it back on to the rest of the leaf and fixing it with a few strands of silk. The imagines were at that date very common, and as the larvae eventually hatched again in mid-March and there is a spring brood in September to October, the insect appears to have three distinct broods in this district.

Eggs.—The eggs are laid singly on the leaves of *Rhynchosia senna*, Gill., usually on the underside, though this is by no means a hard and fast rule. Once the foodplant has been located the eggs are easily spotted owing to their light colour on the green leaves. The eggs appear to be laid near the edge of the leaf, but whether this is always the case, I do not know. The egg when first deposited is white in colour, round, of 1·10 mm. diameter, slightly flattened at the poles and ribbed between the poles bearing fourteen such ribs terminating at either pole on a slightly raised ring, which encloses a smooth surface, the surface of the egg outcurved between each rib. The eggs are